POR SF
11.3.18.1 V13

Oregon
Theodore Kulongoski, Governor

Department of Environmental Quality
Northwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-6945
TTY (503) 229-5471

January 13, 2003

Steven J. Osborn
Remediation Project Manager
Kinder Morgan Energy Partners, L.P.
100 Cement Hill Road, Suite 500
Fairfield, CA 94533

RE: Review of Draft Remedial Investigation Report for the Kinder Morgan Liquid Terminals – Linnton Facility (ECSI No. 1096)

Dear Mr. Osborn:

The Department of Environmental Quality (DEQ) reviewed the October 2002 Draft Remedial Investigation Report (RI Report) prepared by KHM Environmental Management, Inc. for the Kinder Morgan Liquid Terminals – Linnton Facility (Site). The RI Report should be revised consistent with the following general and specific comments, and then submitted to DEQ for review and approval.

New data have been collected which are critical to evaluating the need for source control measures to control migration of contaminants to the Willamette River. Specifically, samples of separate-phase hydrocarbons (SPH), dissolved-phase groundwater samples from the area of SPH occurrence (after SPH removal) and stormwater samples have been collected and analyzed for contaminants of interest at the Site. Additional characterization relative to the occurrence of SPH above the seep which became active in January 2002 has also been conducted since preparation of the RI Report began. The DEQ believes that data from these investigations are critical to the understanding of the site in general, and to the evaluation of risk posed to human health and the environment.

The site characterization data should be interpreted and discussed in more detail with respect to source of release, potential migration pathways, how they relate to potential exposure, etc. This interpretation should be used as the basis for the development of the Conceptual Site Model (CSM). The presence of SPH, a key feature of the site, and the most obvious risk driver and primary focus of source control efforts, should be integrated into the interpretation (and consistently referenced throughout the RI Report) to support the CSM and as a basis for development of source control actions.

Site Description –

Section 2.1.1 It is difficult to envision the configuration and operation of the stormwater collection and treatment system. A map showing the layout of the stormwater capture zones, conveyances, treatment, storage, and discharge points should be included in the revised report.

A map differentiating the above-grade and sub-grade piping, and showing the connection of the tank system to the Olympic Pipeline should also be included. Buried features like piping runs that may influence contaminant transport should be identified.

The report states (Section 2.1.1) that sandblast grit was spread in the lot at the southwest corner of the property after analytical testing demonstrated that it did not contain unacceptable levels of contaminants. More detail on the timing, quantities disposed, sources, testing, and screening procedure is required.

The description of current Interim Remedial Actions in Section 2.4 should be expanded to include a description of the objectives, along with a brief summary of efforts conducted to date at the site to characterize the extent of SPH above the active seep.

Land Use –

It appears that the conclusion of the Land Use Determination is that the property is likely to remain in industrial use consistent with its heavy industrial zoning and river industrial zone overlay designation. To conclude this section, a statement regarding Kinder Morgan Energy Partners' intentions with regard to future site use consistent with the current zoning should be included.

Conceptual Site Model –

A figure showing locations where suspected contaminant sources have been confirmed or discovered based on the RI data should be included. Based on new site data, there may be sources near MW-16, MW-13, and MW-6 that are not related to the bulk storage units.

Section 5.2.1 A geologic cross section perpendicular to the river in the vicinity of the SPH and seeps (and including the bulkheads and river) would be useful to illustrate the connection between Site groundwater and surface water and aid in the visualization of the associated contaminant pathway.

Section 5.2.2 Figures 22 and 23 have distinctly different groundwater elevation contours, but according to the legend are representing the same period.

Section 5.3 Other contaminants (namely metals) and pathways (stormwater runoff, for instance) exist at the site than those described. A figure showing the Conceptual Site Model will aid in presenting the key sources, active pathways, and potential receptors at the site. The DEQ Guidance on Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites provides a useful description for the development and use of a CSM as the basis for organizing site data for risk assessment.

Section 5.4 The Locality of Facility (LOF) is not defined by site boundaries, but rather is undefined to the southeast (MW-8 and MW-9), to the southwest (MS-16) and to the northwest (MW-6). Off-site work may be necessary to complete the evaluation of the extent of contamination. The LOF includes the river, not just the riverbank. While it is correct that in-water nature and extent of contamination due to past releases and associated risk assessment will likely be conducted by the Environmental Protection Agency (EPA), impacts within the river from current (active) upland sources should be reflected in the LOF.

Remedial Investigation Results –

Soil and groundwater concentrations for key contaminants of interest (COIs) should be presented as isoconcentration plots to aid in visualizing the extent and magnitude of contamination in these media. The extent of contamination can be delineated using EPA Region IX Preliminary Remediation Goals (PRGs) and/or DEQ Level II Screening Level Values (SLVs), as appropriate. Subsequent figures showing the extent of contaminants which exceed risk levels for various media would be useful. With respect to soil concentrations, data should be grouped to coincide with the exposure units carried into the risk assessment (surface soils for stormwater and outdoor exposure of site workers, and shallow soils trench-worker scenario, for instance).

A figure similar to Figure 3 in the Ecological Risk Assessment should be added to the main body of the RI illustrating the SPH distribution and relative observed thickness. If the SPH zone is spatially correlated to dissolved-phase contaminants (total petroleum hydrocarbons; benzene, toluene, ethylbenzene and xylenes; metals; etc.), a figure (or figures) should be prepared to illustrate the correlations. Discuss any notable correlations or negative correlations in the text.

The distribution of metals in site soils and groundwater should be discussed. For instance, lead concentrations in samples collected from surface soils can be distinguished from concentrations in shallow soil (see attached graph), indicating that surface soil has been impacted by lead above expected background levels. The potential that these surface soils could impact other media (stormwater, groundwater, etc.) should be evaluated using data collected since the completion of the draft RI. Elevated arsenic concentrations in site groundwater do not appear to coincide with SPH or high dissolved-phase concentrations. An explanation for the zone of high dissolved arsenic concentrations should be explored.

The groundwater characterization should include information on the effects of river levels, the bulkhead, and any observed deflection of the water table by SPH. A qualitative estimate of the flux of SPH to the river should be made to help place the risk from this pathway in perspective.

Contaminant Screening/Hot Spot & Source Control Evaluation –

Recently collected data (hydrocarbon characterization and dissolved-phase COIs in wells where SPH is present) needs to be integrated into the risk assessments. The current assessment of risk

probably underestimates the risk posed by certain pathways due to the absence of dissolved-phase contaminant data in the area of SPH occurrence.

If surface soil has the potential to contribute metals or polycyclic aromatic hydrocarbons to Portland Harbor sediments via the storm water runoff pathway (additional information on stormwater treatment system requested), then there is a possibility that a "highly mobile" hot spot exists for soil at the site.

The fact that SPH is present, is highly mobile (as evident by the occurrence of seeps), and the documented exceedance of risk-based screening values in riverbank groundwater and seep samples means that the SPH and portions of the site groundwater are hot spots per Oregon Revised Statute 465.315(2)(b) and Oregon Administrative Rule 340-122-115(31). The decision to remedy the hot spot via containment or treatment will be deferred to the feasibility study where all the balancing factors will be considered. Until then, source control measures (which you have already initiated) will be required to eliminate the migration of contaminants to the river/sediments.

Risk Assessment General Comments –

Recently collected data (dissolved-phase COIs in wells where SPH is present) needs to be integrated into the risk assessment, which probably underestimates the risk from the groundwater pathway because the area with highest contaminant concentrations is excluded.

Each exposure unit needs to be described in relation to the Conceptual Site Model and the selection of site data used to calculate an exposure point concentration explained.

Ecological Risk Assessment –

Evaluations should be performed to identify source controls necessary to protect ecological receptors. The DEQ Guidance – *Portland Harbor Source Control Strategy, Agency Review Draft, June 21, 2002*, (a copy attached for your use) lays out a procedure for evaluating whether source control is necessary. The procedure calls for comparison of contaminant concentrations in riverbank groundwater and seeps at Portland Harbor sites to applicable standards including Ambient Water Quality Criteria (AWQC) established under 304(a) of the Clean Water Act (updated November 2002), the Level II SLVs for surface water and freshwater sediments found in the DEQ Guidance for Ecological Risk Assessment, Level II Screening Level Values, April 1998 (updated December 2001), Narrative Water Quality Criteria established in ORS Chapter 240, Division 41, and naturally occurring background concentrations.

Contaminant concentrations in riverbank groundwater and/or seeps exceed AWQC (for freshwater chronic conditions) and/or Level II SLVs for copper, barium, lead, zinc, fluorene, and phenanthrene. This potential impact to the river needs to be discussed in Sections 7.1 and 9.

Similarly, the two sediment samples should be screened against Level II SLVs; the sample designated SED-3 exceeds SLVs for several PAH constituents by over one order of magnitude.

Appendix D, Page 4-2 At the end of the second-to-last paragraph, there is the statement that "Evaluation of risks to aquatic species will be completed in accordance with the CERCLA program." The current expectation is that individual sites within the Portland Harbor Superfund site will be responsible for evaluating ecological effects associated with contaminants which have a potential to migrate to the river. Further, contaminants from upland sources must be remedied to levels protective of ecological receptors in the river.

Human Health Risk Assessment –

Section 7.2 Include a reference to the detailed presentation of the human health risk assessment (Appendix E). It appears that human consumption of fish was not included as a complete pathway.

Section 8.0 SPH should be discussed here as a hot spot for both human and ecological receptors for the reasons previously discussed.

The Hot Spot guidance referenced in this section utilizes PRGs which are out of date. Current PRGs (October 2002) should be used in the evaluation of specific constituents as potential hot spots.

Section 9.0 The summary and conclusions should include a discussion of whether the site is a current source of contamination to the river and plans for source control evaluation/ implementation, as this is the primary focus of Portland Harbor remedial investigations. This should include both SPH and dissolved-phase constituents. Besides visual observations of sheen on the river, groundwater/seep impacts to river water and sediment should be evaluated (at least initially screened against AWQC/SLVs).

Appendix E, General Comment In Section 8 of the main RI report, there is a discussion of free product in the subsurface being a potential hot spot. In the ecological risk assessment (Appendix D), Figure 3 is provided showing the location of samples with free product and the thickness. However, in the human health risk assessment, there is no indication that free product is present or that it may constitute a health risk. Free product should be addressed up front, at least at the screening step.

There are PRG screening values for petroleum hydrocarbon constituents such as the BTEX and PAH compounds. However, there are no PRGs available for the majority of aliphatic and aromatic compounds comprising petroleum hydrocarbons, nor is there a PRG for total petroleum hydrocarbons. DEQ risk assessment guidance states that if a PRG is not available for a chemical of interest, the chemical must be identified as a chemical of potential concern, and retained in the

risk assessment. Consequently, separate phase hydrocarbons should be evaluated at least qualitatively in the human health and ecological risk assessment.

Include in Appendix E a discussion of free-phase hydrocarbons. This should be included in the introduction, uncertainty, and conclusion sections. Because the risk of contact with free-phase has not been quantified, the assumption should be that exposure would result in an unacceptable risk.

Page 2-1, Section 2.1, first paragraph There is a statement that "evaluation of Willamette River exposures is outside the scope of this evaluation." This issue has not been resolved for Portland Harbor sites. The evaluation of exposures to Willamette River receptors from active upland sources will be required by DEQ as a part of the upland investigations. Source control measures will be required for Portland Harbor sites based on whether contaminant discharge represents a likely future adverse effect on the beneficial use of water. Exceedance of AWQC in ground-water adjacent to the river will require implementation of source control measures unless further evaluation is performed to estimate contaminant concentrations at the point of exposure.

Page 7-9 In general, DEQ accepts the methodology presented for evaluating TPH using a fraction approach. However, because details on the proportion of the fractions and toxicity values for the surrogate chemicals were not provided, we could not confirm the TPH screening values shown in Table 26. Provide sufficient support (parameter values and equations) for the calculation of TPH screening values.

Table 7 EPA Region 9 PRGs were updated since the draft RI report was prepared. The final RI report should include October 2002 PRGs. The new toxicity values for ethylbenzene have been withdrawn by EPA, so DEQ considers it appropriate to screen ethylbenzene using the 2000 PRGs.

Table 19 An exposure point concentration (EPC) is provided for n-propylbenzene although footnote d indicates that the chemical was not detected. Footnote f states that air concentrations for n-propylbenzene were not calculated because parameters such as diffusion coefficients are not available. DEQ's risk-based decision making guidance includes parameter values for this compound.

The mean concentration of lead is presented and considered appropriate for the calculation of blood lead levels. Nevertheless, an upper confidence on the mean should be calculated, or the maximum detected concentration be used, for direct comparison with acceptable soil levels (750 mg/kg for industrial soil).

For each exposure scenario, the appropriateness of the datasets for calculating exposure point concentrations should be discussed further in the text (Section 4.2 of Appendix E). The issue is important and should not be presented primarily in footnotes to a table.

Table E-6 Provide a reference to the calculation of C_{air} and the supporting information used in the calculation.

Appendix C to Appendix E As discussed in the comment on Table 19, the appropriateness of the datasets used for calculating exposure point concentrations should be discussed in the text. Two issues should be addressed: the presence of numerous data where chemicals were not detected, and the lack of data in areas of expected high chemical concentrations because of the presence of separate phase hydrocarbons.

Data evaluations using most statistical methods, including the bootstrap method, are confounded by the presence of many non-detect values. It may be appropriate to evaluate a smaller set of data that is more representative of an exposure area.

Often, samples were not collected for analysis in areas of separate phase hydrocarbons. This is understandable because of frequent quantification problems given the high chemical concentrations. However, the implications of these potential quantitative data gaps need to be considered in the statistical evaluation of the dataset. The areas with the highest potential concentrations may not be effectively quantified, and the potential risks may therefore be underestimated. It may be necessary to make the assumption that risks from contact with separate phase hydrocarbons are unacceptable.

A project meeting should be planned to discuss the Department's review of the draft RI, remaining issues regarding site characterization (especially extent of separate-phase hydrocarbon plume), incorporation of recently acquired data into the RI, definition of exposure units, development/ interpretation of the site model, and the schedule for revision of the RI Report in relation to efforts to develop and implement source control measures.

I understand that you will be in Portland in upcoming weeks. Please contact me at (503) 229-5492 or by e-mail at pettit.don@deq.state.or.us to schedule a project meeting during your visit.

Sincerely,

Don J. Pettit, R.G.
Cleanup & Emergency Response

Enclosed: Portland Harbor Source Contol Strategy – Agency Review Draft (June 21, 2002)
Graph – Lead Concentration in Shallow and Surface Soils

cc: John Foxwell, R.G.
GeoEngineers, Inc.
7504 SW Bridgeport Road
Portland, OR 97224

Kelly Kline
KHM Environmental Management, Inc.
7150 SW Hampton Street, Suite 220
Portland, OR 97223

Terry Hosaka, CU/Spills
Mike Rosen, CU&PH
Jim Anderson CU&PH
Alicia Voss, CU&PH
Tom Gainer, CU&PH
Mike Poulsen, CU&PH